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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,498	03/28/2001	Nobuaki Usui	1075.1155	1215

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EXAMINER

LEE, TOMMY D

ART UNIT PAPER NUMBER

2625

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/818,498	Applicant(s) USUI ET AL.	
	Examiner Thomas D. Lee	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-39 and 42-44 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-39,42 and 43 is/are allowed.
- 6) ☒ Claim(s) 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action is responsive to applicant's amendment filed July 17, 2006.

Claims 1, 3-39 and 42-44 are pending.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,208,684 (Itoh) in view of U.S. Patent 5,107,346 (Bowers et al.).

Itoh discloses a method of converting a multilevel input image into a binary image, comprising: directly calculating a value of a noteworthy pixel of the multilevel input image from multilevel values of pixels prior to halftoning, said calculated value being converted to a binary value (density of an object pixel calculated as a function of density data of peripheral pixels by Laplacian calculation unit 12 (column 6, lines 3-19); corrected density data of object pixel converted to binary data at binary-coding unit 13 (column 6, lines 20-36)); and selectively diffusing a possible error occurring in the binary value (binary-coded error weighted by error diffusion coefficient at error distribution unit 15, distributed to certain peripheral pixels in accordance with error diffusion matrix 18 (column 6, lines 37-65)).

Itoh does not disclose subsequently changing error diffusion techniques with respect to each of the pixels surrounding the noteworthy pixel. However, Bowers et al. discloses an error diffusion method, wherein pseudo-random weights are determined for diffusing error values to peripheral pixels (column 7, lines 32-59). In one embodiment,

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for each pixel location from which a coding error is diffused, a random choice is made of the order in which errors are to be diffused to immediately adjacent neighbors (column 10, lines 33-43). Thus the error diffusion technique is changed for each pixel location.

Bowers et al. noted that with conventional error diffusion techniques often result in printed images containing discernible patterns, or artifacts, which detract from the appearance of the images (column 2, lines 31-41). One of ordinary skill in the art would have discerned from Bowers et al. that by providing randomly-generated weighting coefficients for calculating error values to be diffused to peripheral pixels, and by randomly choosing the order in which the error values are diffused to the peripheral pixels, such artifacts can be avoided. Therefore, it would have been obvious for one of ordinary skill in the art to have modified the teaching of Itoh in such a way that the error values are randomly calculated and distributed, as disclosed in Bowers et al.

Allowable Subject Matter

4. Claims 1, 3-39, 42 and 43 are allowed.
5. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest calculating the multilevel value of a given noteworthy pixel, "based on the multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel," prior to conversion of the estimated multilevel value of the noteworthy pixel into a binary value, as recited in amended base claims 1, 38, 39, 42 and 43. Reasons for indication of allowable subject matter regarding base claims 14, 18 and 30 are as set forth in the prior Office action.

Response to Arguments

6. Applicant's remarks on pages 11-13 of the current amendment, regarding the prior rejection of claims 1, 2, 7-11, 16, 17, 32-35 and 40-43 under 35 U.S.C. 103(a), are rendered moot because of the added limitation to the base claims. The added limitation (estimating the value of a noteworthy pixel based on multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel), as mentioned above, is not disclosed or suggested by the prior art. As for remarks regarding new claim 44, the reasons for rejection are set forth above.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (571) 272-7436. The examiner can normally be reached on Monday-Friday, 7:30-5:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thomas D Lee
Primary Examiner
Technology Division 2625

tdl
September 21, 2006